

# USB to RS-232/RS422/485

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## US-101-I    USB To Serial Operation Manual



First Edition, Jun 2008

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# 1

## Introduction

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Thank you for your purchase of US-101-I as the USB to serial adapter. Featuring USB(Universal Serial Bus) interface technology, it is converted the USB to RS-232 or industrial RS422/485 , so can be easily adopted for industrial machines with RS232 or RS422/485 interfaces. US-101-I is compatible with fully compatible with the USB V1.0□2.0 . US-101-I's electrical power is from USB port and doesn't need any power adapter. You can connect a PC USB port or USB hub to US-101-I via the USB cable and High-Speed RS-232/422/485 serial port (Auto-Detection) which features easy connectivity for traditional serial devices in your working environments.

The RS232 standard supports handshaking signals (such as RTS, CTS) and full-duplex communication. For the RS485 control, it is completely transparent to user and their software written for Half-Duplex COM works without any extra modification effort.

US-101-I meets the industrial level as provide 3000 VDC of isolation to protect the host computer or other connected equipments from ground loops and destructive voltage spikes on the RS-232/422/485 data lines. It also offers internal surge-protection on data lines. Internal high-speed transient suppressors on each data line protect US-101-I from dangerous voltages levels or spikes.

# 2

## **Package checklist**

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US-101-I product is shipped with the following items:

- 1 unit of US-101-I USB to RS-232/422/485 converter
- 1 unit of A type to B type USB cable
- User Operation Manual
- Software CD

NOTE: Notify your sales representative if any of the above items is missing or damaged

# 3

## Product Specification

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- **Serial Port**

- **RS-232**

- No. of Ports : RS-232 \* 1 Port
    - Port Type : DB9 male
    - RS-232 Signals : DCD , RX , TX , GND , RTS , CTS , DTR , DSR
    - Receive buffer : 576 Byte
    - Transmit buffer : 640 Byte
    - Baud Rate Speed : 300 bps□921.6k bps
    - Parity :None , Odd , Even , Space , Mark
    - Data Bit : 5 , 6 , 7 , 8
    - Stop Bit: Auto-Detection : 1 , 1.5 , 2,
    - Flow Control : X-On / X-Off or Hardware
    - Optical isolation protection : 3000V DC
    - Connected Serial port type identification : Auto-Detection
    - 15KV ESD for all signal

- **RS-422/485**
  - No. of Ports : 422/485 \* 1 Port (Terminal Block)
  - RS-422 Signals : RxD+ , RxD- , TxD+ , TxD- in Full-duplex (Surge Protection)
  - RS-485 Signals : Data+ , Data- in Half-duplex (Surge Protection)
  - Receive buffer : 576 Byte
  - Transmit buffer : 640 Byte
  - Baud Rate Speed : 300 bps□230.4k bps
  - Built-in RS-422/RS-485 Terminal Resister (Surge Protection)
  - Optical isolation protection : 3000V DC
  - Connected Serial port type identification : Auto-Detection
  - Built in Terminal 100 Ohm Terminal resistor SW selection ON/OFF
  - 15KV ESD for all signal
- **USB Port**
  - No. of Ports : USB \* 1 Port
  - Fully compatible with the USB V1.0, V1.2, V2.0
  - USB type B connector
  - Baud Rates : Full speed 12 Mbps.
- Driver OS Support
  - Windows – 98E / 2000 / XP / Server 2003 /Vista , Mac osx / os9 , Linux 2.4 / 2.6
- Power :USB bus power as voltage DC +5V
- Led Lamp :
  - SYS (Red), Rx (Orange), Tx (Green)
- Environment :
  - Operating Temperature: 0□□70□
  - Storage Temperature : -20□□85□

- Humidity: 5-95% RH
- Dimensions : 88 \* 91 \* 27 mm ( W \* D \* H )
- WEIGHT : 94 gm
- Regulatory Approvals :
  - EMC : FCC Class A, CE Class A
  - WARRANTY : 1 Year

# 4

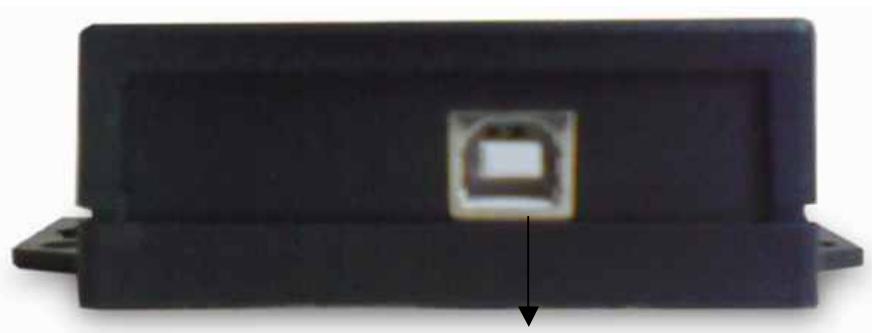
## Product Panel Views Description

### US-101-I Product Views



#### USB Type B Connector

**Power Outlet** - The US-101-I USB to RS-232/422/485 is powered by USB (Universal Serial Bus) port a single 5V DC (Inner positive/outer negative) power supply and 500mA of current. To connect the USB cable to between a PC USB port or USB hub and US-101-I's USB port. If the power is properly supplied, the SYS indicator of red color LED will be on.



**USB Type B Port**

US-101-I's USB port is a USB type B connector and it is fully compatible with the USB V1.1□2.0

### **Serial I/O Port**

### **Serial I/O Port RS-485/RS-422**



### **Serial I/O Port of RS-232/422/485**

To connected the serial data cable between the converter and the serial device. Follow the parameter setup procedures to configure the converter (see the following chapters).

### **Terminator**

The purpose is for compensating signal attenuation in long distance connection at RS-485/422 . If the switch 1 & 2 are set in “ON” position, the signal compensation will be activated. To disable the function, just to set switch 1 & 2 to OFF position.

### **LED Indicators**



### **SYS (Red)□**

It is a power indicator (When the power is on, the SYS LED will be on.)

### **RX (Orange)□**

Data received indicator (When data are received from the USB, the RX LED will be on.)

### **TX (Green)□**

Data sent indicator (When data are sent out to the USB, the TX LED will be on.)

# 5

## US-101-I Driver Installation

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When setting up US-101-I adapter for the first time, you have to install CP201x as “US-101-I Driver” first in your computer device before connecting it. There are several kind OS as Windows 98 / XP/2000/VISTA..., Linux ...□Mac.... The utility CD is enclosed in the device box.

All the US-101-I USB to RS-232/422/485 Adapters must be installed the driver first before you use it.

### ● Driver Installation

When connecting up US-101-I adapter for the first time, you have to install the driver software in your computer first.

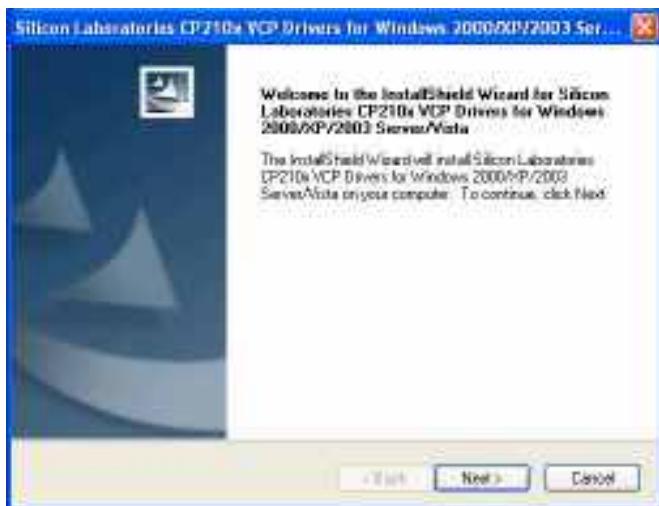
#### A. Install CP210x\_VCP\_Win2K\_XP\_S2K3 software

Through CD-ROM and find adaptable OS to your computer equipment.



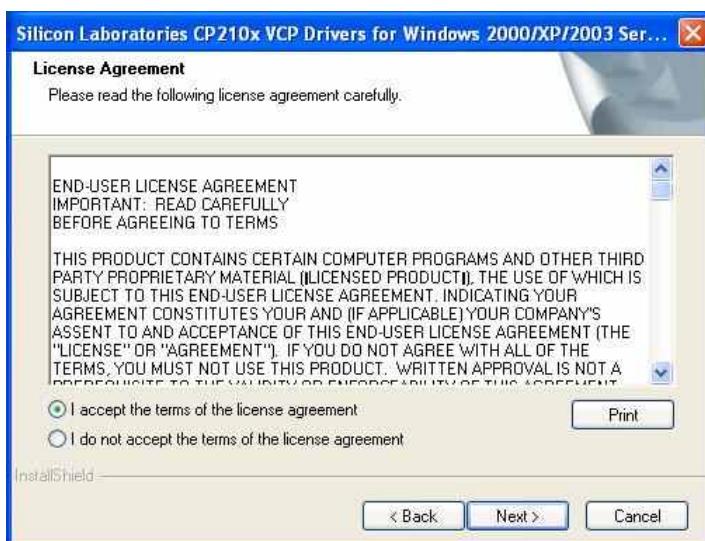
#### B. Choose “Next” Icon

If your computer equipment is running Windows OS that the pop-up screen of installing message will be showed as “CP210x VCP Drivers for Windows 2000/XP/2003 Server/Vista on your computer” and then to Click “Next” icon for going to next step.



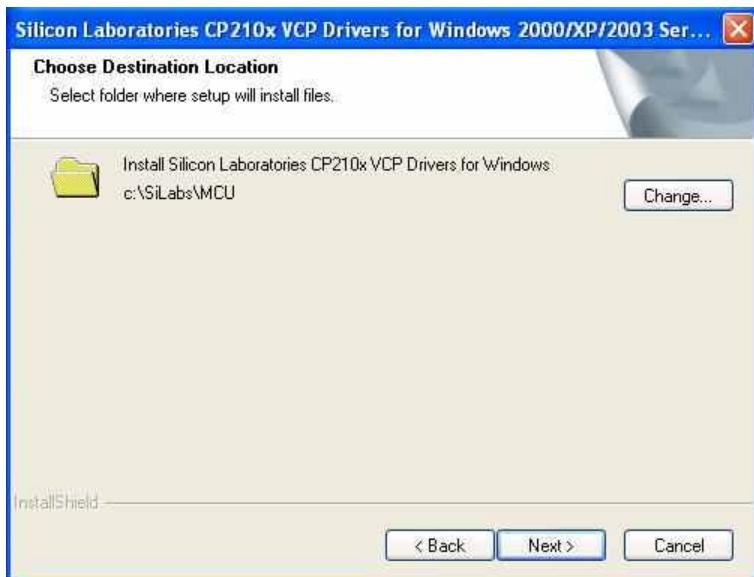
### C. Choose “Accept” item of license agreement

After reading the license agreement then if you agree the terms to choose the item “I accept the term of the license agreement”.



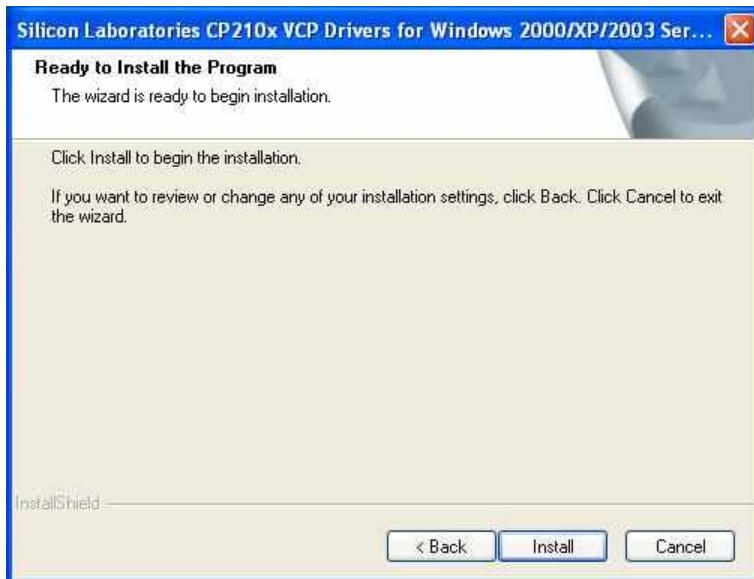
## D. Choose destination location

It is for saving the CP201x driver software in destination location of computer.



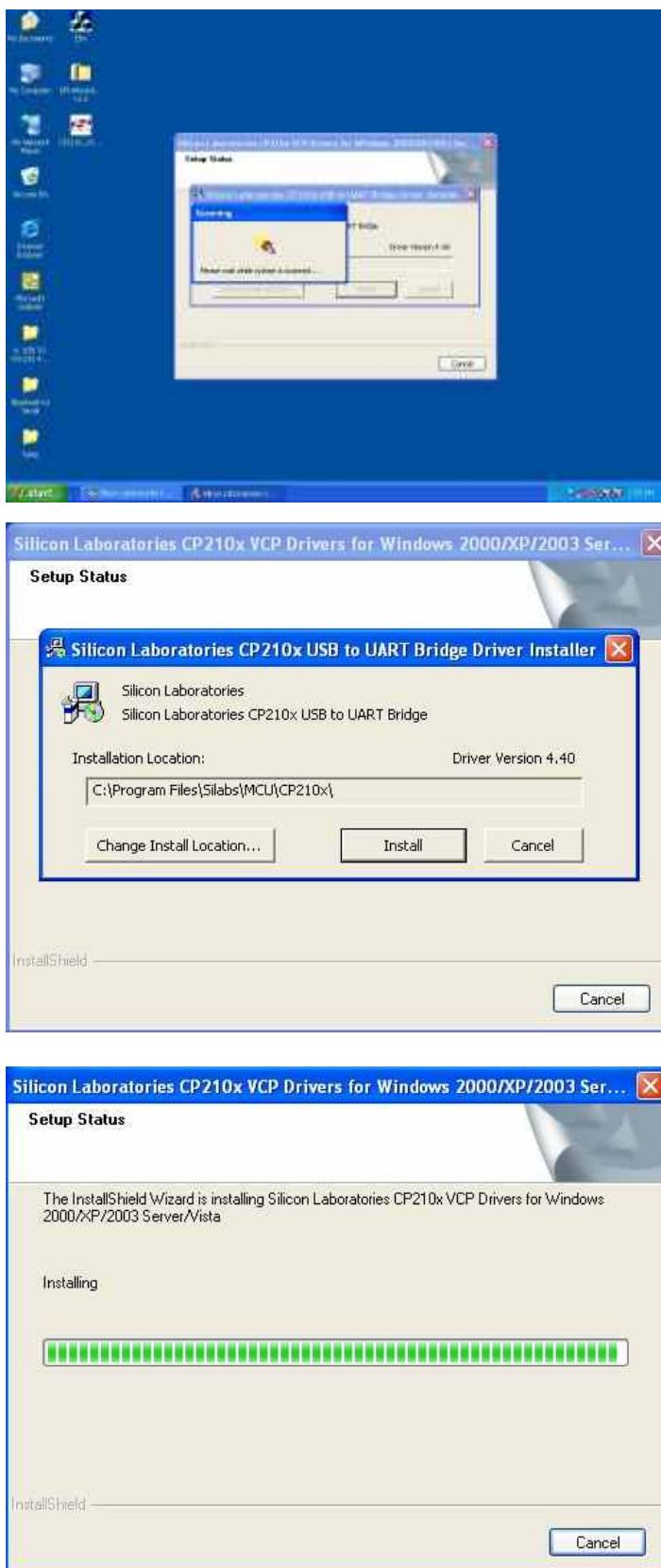
## E. Execute the program installation

Click the “install” icon to begin installation of CP210x driver.



## F. Scan and install CP210x USB to UART Bridge Driver Installer

After click “Install” icon, system is going to scan CP210x USB to UART Bridge driver installer and installation location.



## G. “System Settings Change” Notice

The message is notified you that your computer has been changed after installing of CP210x USB to UART Bridge Driver Installer. The new setting will take effect after restarting your computer.



## H. InstallShield Wizard Complete

CP201x driver has successfully installed and click “Finish” icon for exiting the wizard.



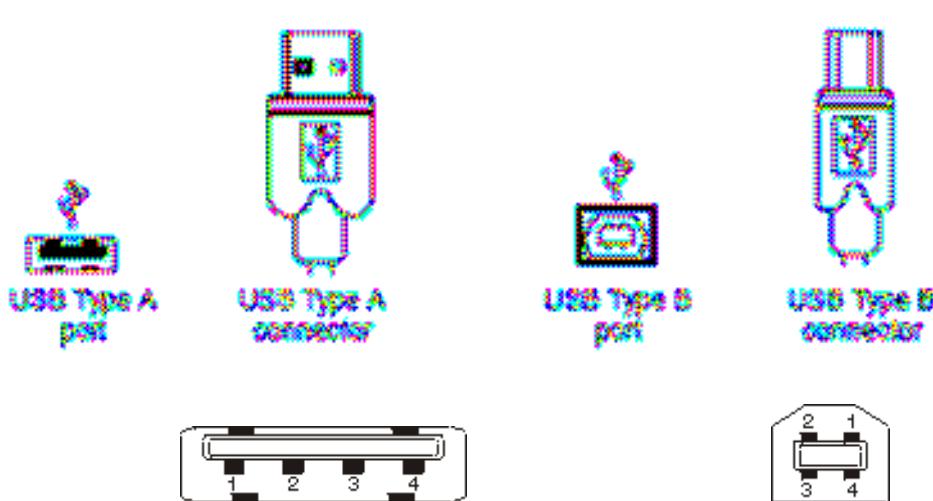
# 6

## US-101-I Hardware Installation & Setup

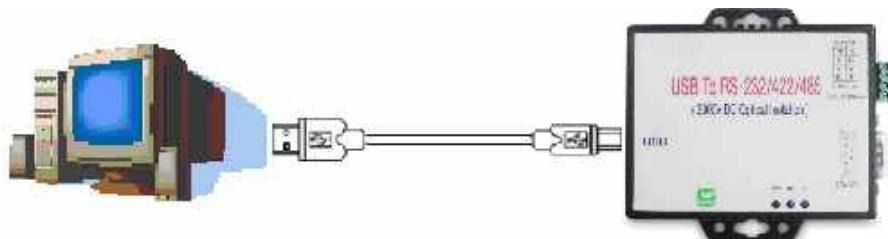
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### ● Hardware Installation

1. Power on your computer and until OS is ready after booting
2. USB cables have two distinct connectors. The Type A connector is used to connect the cable from a USB device to the Type A port on a computer or USB hub. The Type B connector is used to attach the USB cable to a USB device.



3. Connect USB cable between a PC USB port or USB hub and US-101-I of type B USB port.



4. Connect the serial port (RS232 or RS422 or RS485) equipments to US-101-I of USB to serial converter.
5. After connecting US-101-I USB to serial converter then a message as “ New device has been connected” will be pop-up on screen. However, the CT201x driver needs to be installed in PC in advance.
6. The SYS indicator of red LED will be turn into on. The US-101-I USB to serial adapter is active.

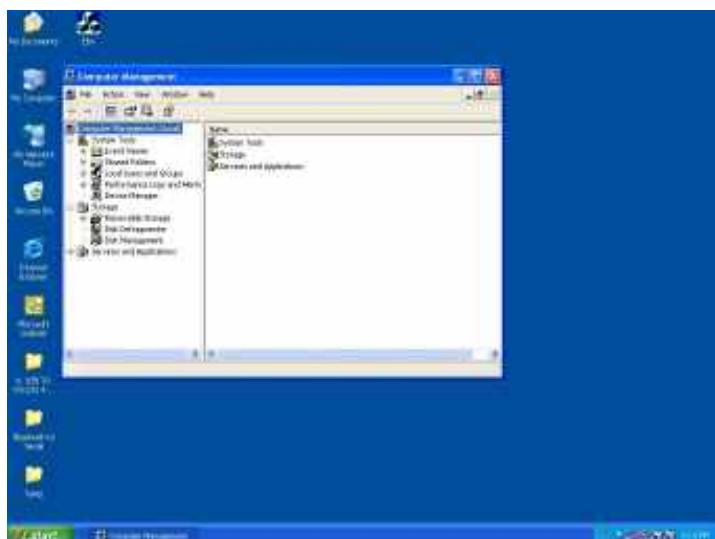
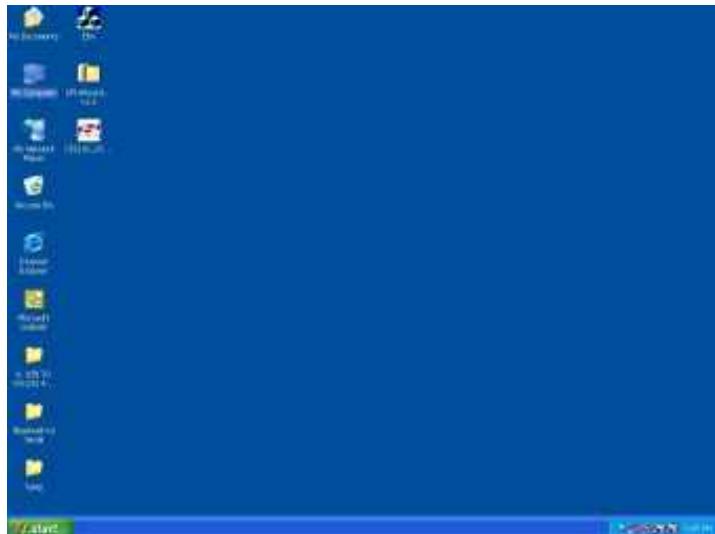
## ● **Hardware Setup**

When US-101-I adapter has successfully connected and you can setup more detail parameters by computer's manage.

### **A. Into “Manage” icon in My Computer**

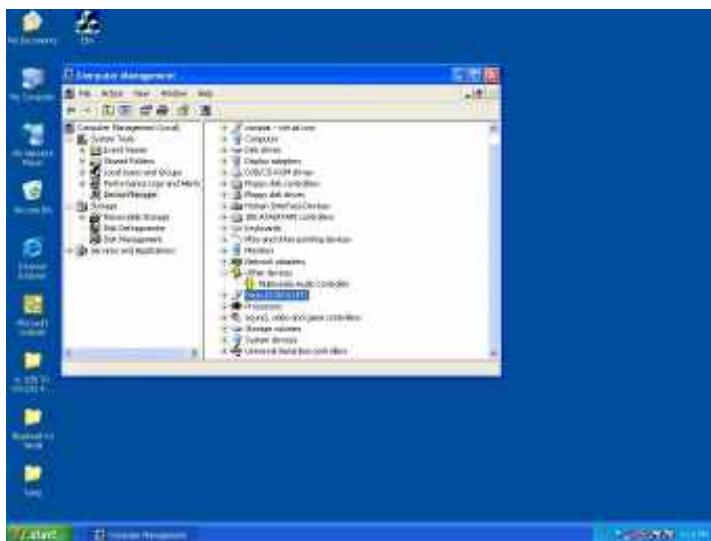
Click “My Computer” icon and then press the right side button of mouse.

After you click the manage item on list bar then “Computer Management(Local) list will be pop-up .



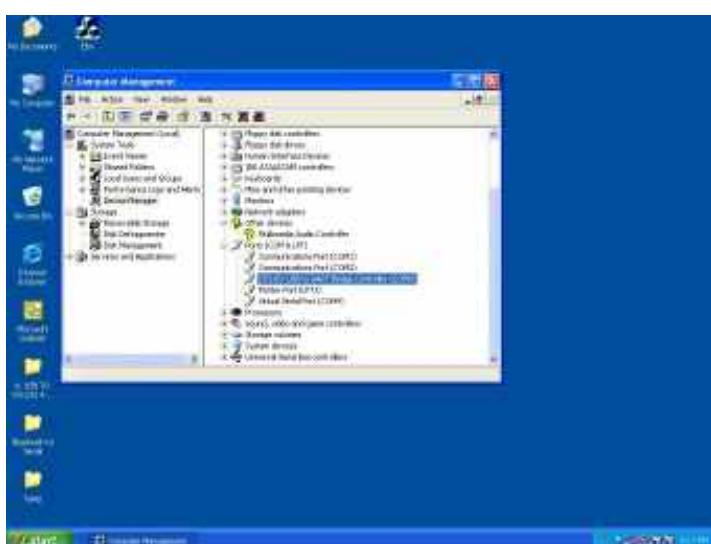
**B. Choose “Device Manager” and click “Ports(COM & LPT)” in Device Manager**

Click “Device Manager” item, all devices of computer will be list on right site of screen and then click “Ports (COM & LPT) item for looking for more COM devices.



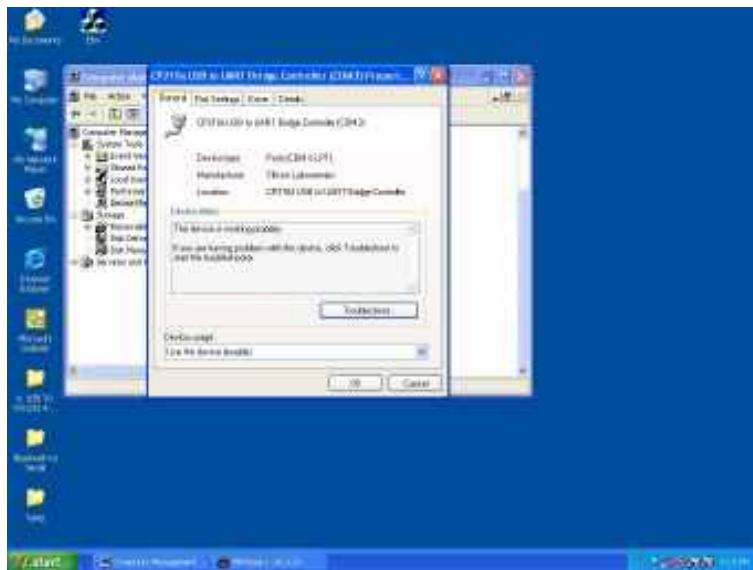
**C. Detail parameters of CP210x USB to UART Bridge Controller**

Click “CP210x USB to UART Bridge Controller” for getting more detail information of the device.



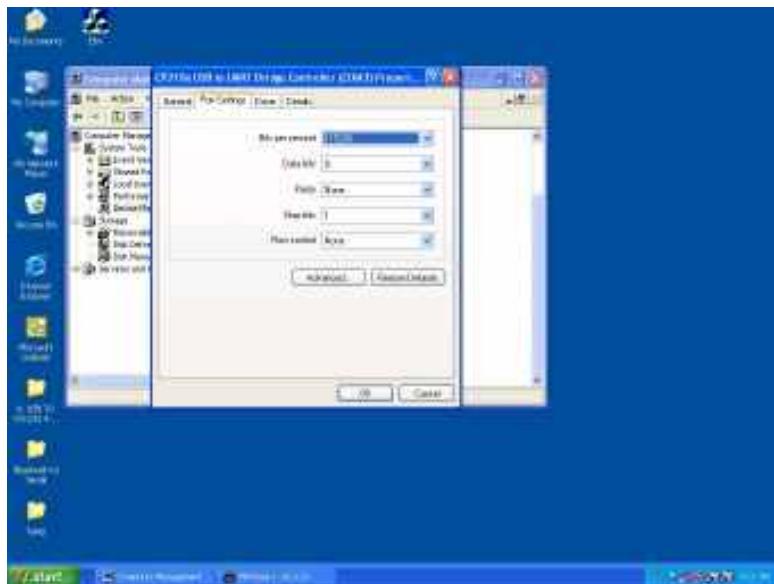
## D. Device status of CP210x USB to UART Bridge Controller

This is showing the statuses of device and some product general information. COM port number of device is also display on.



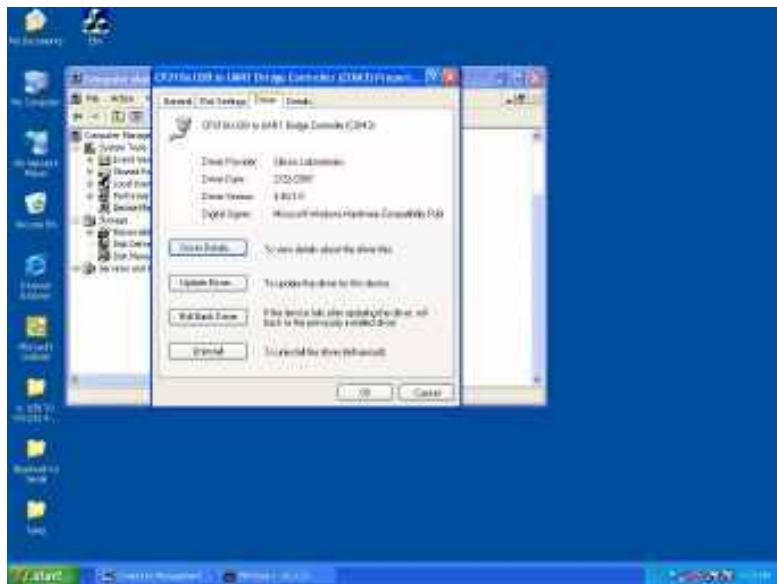
## E. “Driver” detail information

This is for checking more detail information of driver in this device.



## F. “Details” item

It is for checking device ID numbers as device instance ID.



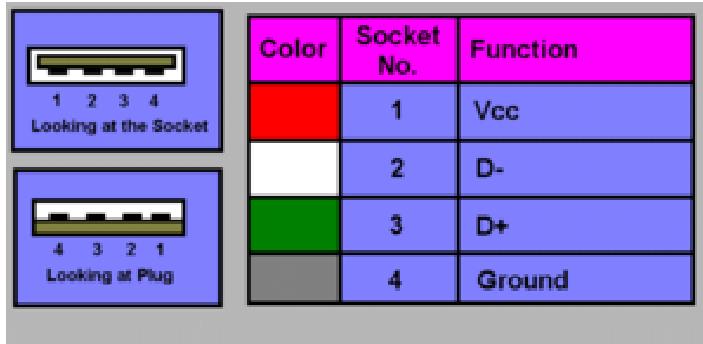
# Appendix A

## Pin outs and Connector

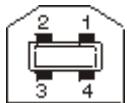
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### □ USB Layout Diagram

Type A USB Connector

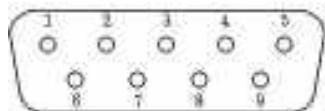


Type B USB Connector



### □ RS-232 Pin Assignment

The pin assignment scheme for a 9-pin male connector is given below.



PIN 1 : DCD

PIN 2 : RXD

PIN 3 : TXD

PIN 4 : DTR

PIN 5 : GND

PIN 6 : DSR

PIN 7 : RTS

PIN 8 : CTS

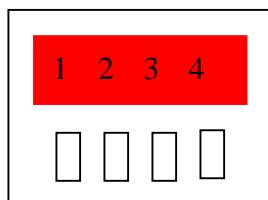
PIN 9 : X

### □ RS-232 Wiring Diagram

<u>2</u>	<u>RX</u>	<u>3</u>	<u>TX</u>
<u>3</u>	<u>TX</u>	<u>2</u>	<u>RX</u>
<u>5</u>	<u>GND</u>	<u>5</u>	<u>GND</u>
<u>7</u>	<u>RTS</u>	<u>8</u>	<u>C (Flow Control)</u>
<u>8</u>	<u>CTS</u>	<u>7</u>	<u>I (Flow Control)</u>

### □ RS-422 Pin Assignment

The pin assignment scheme for a 4-pin RS-422 is given below.



RS-422 : PIN 1 : T+      PIN 2 : T-      PIN 3 : R+      PIN 4 : R-  
 RS-485 : PIN 1 : D+      PIN 2 : D-

### □ RS-422 Wiring Diagram

<u>R-</u>	<u>2</u>	<u>T-</u>
<u>R+</u>	<u>1</u>	<u>T+</u>
<u>T-</u>	<u>4</u>	<u>R-</u>
<u>T+</u>	<u>3</u>	<u>R+</u>

### □ RS-485 Wiring Diagram

<u>D-</u>	<u>2</u>	<u>D-</u>
<u>D+</u>	<u>1</u>	<u>D+</u>